

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,898,045 B2
APPLICATION NO. : 10/723757
DATED : May 24, 2005
INVENTOR(S) : Beckl et al.

Page 1 of 3

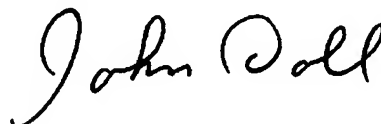
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

THE TITLE PAGE, SHOWING AN ILLUSTRATIVE FIGURE, SHOULD BE DELETED AND SUBSTITUTE THERFOR THE ATTACHED TITLE PAGE.

DELETE DRAWING SHEET 4 AND SUBSTITUTE THERFOR THE DRAWING SHEET CONSISTING FIG 4 AS SHOWN ON THE ATTACHED PAGE.

Signed and Sealed this

Nineteenth Day of May, 2009

A handwritten signature in cursive script that reads "John Doll".

JOHN DOLL
Acting Director of the United States Patent and Trademark Office

(12) **United States Patent**
Beck et al.

(10) Patent No.: **US 6,898,045 B2**
(45) Date of Patent: **May 24, 2005**

(54) **MEDIA WITH PRE-RECORDED
ALIGNMENT TRANSITIONS**

(75) Inventors: **Patricia A. Beck, Palo Alto, CA (US);
George M. Clifford, Jr., Los Altos
Hills, CA (US)**

(73) Assignee: **Hewlett-Packard Development
Company, L.P., Houston, TX (US)**

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 14 days.

(21) Appl. No.: **10/723,757**

(22) Filed: **Nov. 26, 2003**

(65) **Prior Publication Data**

US 2004/0109257 A1 Jun. 10, 2004

Related U.S. Application Data

(62) Division of application No. 09/691,646, filed on Oct. 17,
2000, now Pat. No. 6,700,729.

(51) Int. Cl.⁷ **G11B 20/20; G11B 5/00;
G11B 5/584**

(52) U.S. Cl. **360/76; 360/77.12**

(58) Field of Search **360/72.1, 72.3,
360/74.1, 74.4, 75, 76, 77.01, 77.12, 78.01,
78.02, 78.03**

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,236,525 B1 * 5/2001 Cates et al. 360/51
6,430,008 B1 * 8/2002 Trabert et al. 360/317
6,433,949 B1 * 8/2002 Murphy et al. 360/75

* cited by examiner

Primary Examiner—David Hudspeth

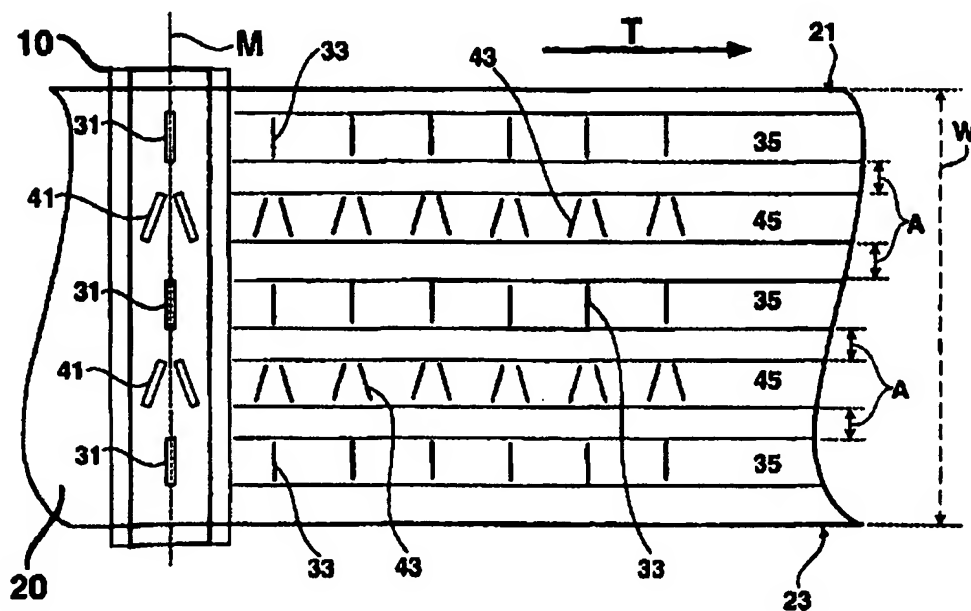
Assistant Examiner—Jason Olson

(74) Attorney, Agent, or Firm—*Trueman H. Denny, III*

(57) **ABSTRACT**

A device for precision alignment of a write element of a tape head to a transport direction of a media that is transported across the tape head is disclosed. The tape head includes at least one alignment element that is cofabricated with the write element so that both the write element and the alignment element have a fixed orientation with respect to a magnetic axis of the tape head. The alignment element and the write element can be fabricated on the tape head using standard microelectronic photolithographic processes. Preferably, the tape head includes a plurality of alignment elements. Those alignment elements are operative to write alignment transitions onto the media. The alignment transitions can be observed to determine if they are indicative of the write element having a predetermined orientation with respect to the transport direction. A read transducer can be used to generate signals from the alignment transitions and those signals can be analyzed to determine if the predetermined orientation of the write element has been achieved. The tape head can include horizontal and/or vertical elements for a gross visual alignment of the tape head to the media. The alignment transitions can be read by a data element of a separate data head. A signal from the data element can be used to adjust the azimuth of the data head with respect to a direction of transport. In servo writer applications where servo code is prerecorded on the media, the alignment transitions can be used to align the write elements of a servo write head to the transport direction of the media so that inter band skew between adjacent servo bands is significantly reduced.

17 Claims, 16 Drawing Sheets



U.S. Patent

May 24, 2005

Sheet 4 of 16

6,898,045 B2

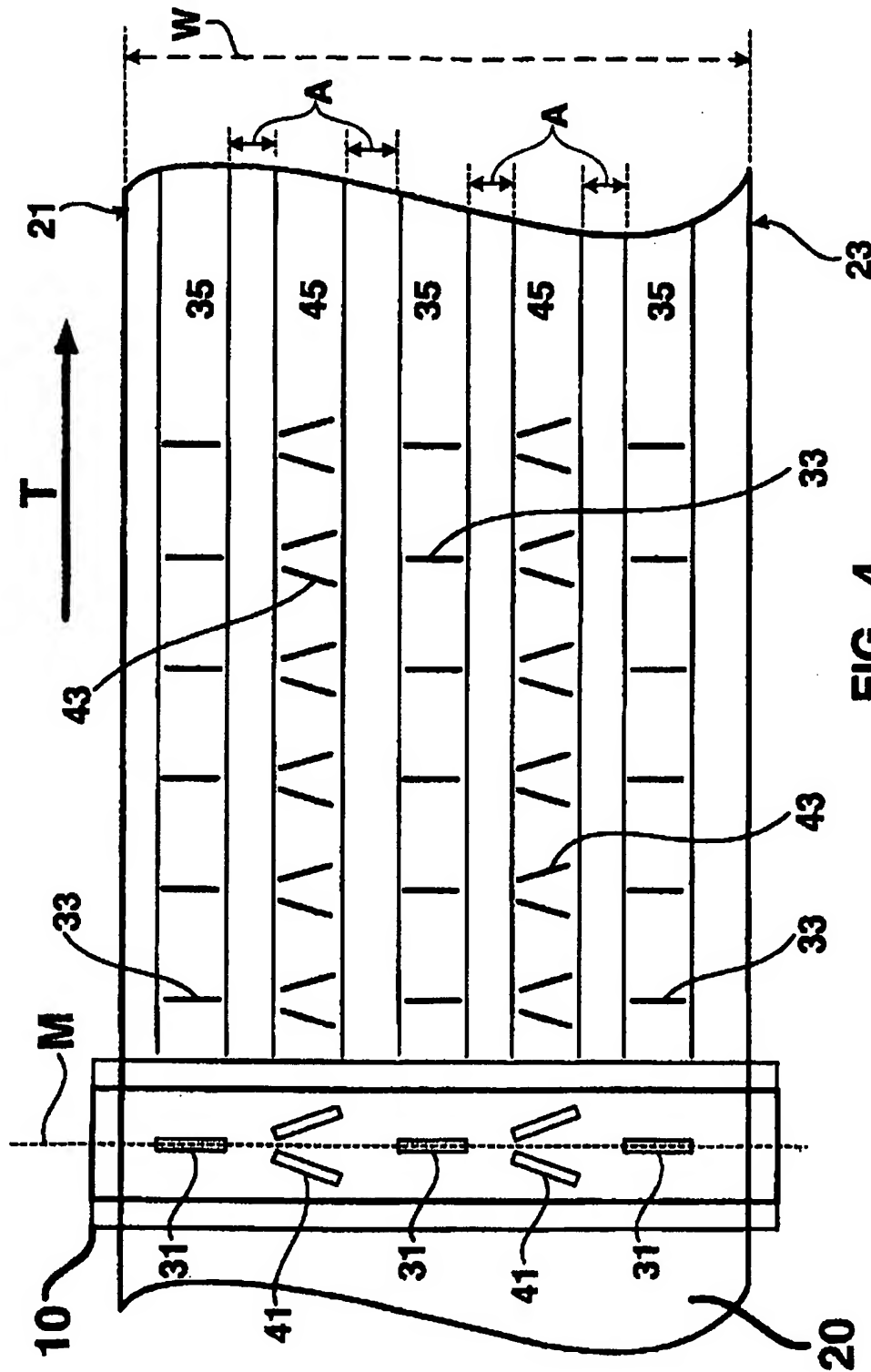


FIG. 4